UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,353	07/11/2003	Masaki Umayabashi	MA-580-US	1535

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/617,353	UMAYABASHI ET AL.
	Examiner	Art Unit	
	EUNSOOK CHOI	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 February 2008</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,2,5-12,18-22,49-51,56,57,60,65-82,84,89,90,93 and 98-109</u> is/are pending in the application.

   4a) Of the above claim(s) <u>98-109</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2,5-12,18-22,49-51,56,57,60,65-82,84,89,90 and 93</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date <u>3/18/2008</u>.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1.   Newly submitted claims 98-109 are directed to an invention that is independent
or distinct from the invention originally claimed for the following reasons:

    I.   Claims 1,2, 5-12, 18-22, 49-51, 56, 57, 60, 65-82, 84, 89, 90, and 93 are
           drawn to adding an expansion tag to a data frame classified in class 370,
           subclass 395.1.

    II.   Claims 98-104 are drawn to an expansion tag storage region comprising a
           plurality of expansion tags, classified in class 370, subclass 395.5.

    III.   Claims 105-109 are drawn to a VLAN tag comprising a priority Tag
           classified in class 370, subclass 338.

Inventions I, II, and III are related as subcombinations disclosed as usable together in a
single combination. The subcombinations are distinct if they do not overlap in scope
and are not obvious variants, and if it is shown that at least one subcombination is
separately usable. In the instant case, subcombination I has separate utility such as
adding an expansion tag to a data frame. See MPEP § 806.05(d).

       The examiner has required restriction between subcombinations usable together.
Where applicant elects a subcombination and claims thereto are subsequently found
allowable, any claim(s) depending from or otherwise requiring all the limitations of the
allowable subcombination will be examined for patentability in accordance with 37 CFR
1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a
continuation or divisional application is anticipated by, or includes all the limitations of, a

claim that is allowable in the present application, such claim may be subject to

provisional statutory and/or nonstatutory double patenting rejections over the claims of

the instant application.

2.   Since applicant has received an action on the merits for the originally presented

invention, this invention has been constructively elected by original presentation for

prosecution on the merits. Accordingly, claims 98-109 are withdrawn from

consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and

MPEP § 821.03.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

4.   Claims 1,2, 5-12, 18-22, 49, 51, 65-82, 84, 89, and 90 are rejected under 35

U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and

distinctly claim the subject matter which applicant regards as the invention. Claims 1, 2,

49, 51, 82, 84, 89, and 90 recite "adding, to **applied said data frame**," is indefinite what

has been applied.

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

6.   Claims 82, 84, 89, 90, and 93 are rejected under 35 U.S.C. 101 because the

claimed invention is directed to non-statutory subject matter. The claims 82, 84, 89, 90,

and 93 recite "a frame transfer program executed on a node in the network for

controlling transfer of said data frame" where a frame transfer program could be

directed to a program per se, note that the network in the preamble is nothing more than

a description of where the frame transfer program is to be located, the adding and

receiving function is the function of the program. The body of the claim, i.e. the adding

and receiving function only breathes life into the frame transfer program and not to the

network. As such, these claims are directed to program per se which is non-statutory.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

8.   Claims 1, 2, 5-7, 9, 11, 18, 49, 51, 56, 60, 65, 67, 69, 82, 84, 89, and 93 are

rejected under 35 U.S.C. 102(e) as being anticipated by Jha (US 7,161,946).

        Regarding claims 1, 49, 56, and 82, Jha teaches adding, to applied said data

frame **(Fig. 6, 146-Receive frame)**, an expansion tag **(Fig. 6, 148-Create MPLS**

Protocol ID field and MPLS LABEL Stack Field in frame) containing information

about forwarding to an egress edge node to said destination to make an expansion

frame; and relaying said data frame **(Fig. 6, 152-Forward frame into MPLS network**

per MPLS LABEL) based on said forwarding information of said added expansion tag

to transfer the frame to said egress node by each node on said network **(Col. 5 Lines 19-32 The frame in MPLS format may then be forwarded into the MPLS network 132 per the MPLS labels 112 for transmission)**.

Regarding claims 2, 51, 60, and 84, Jha teaches the limitations as applied to claim1 above. Jha teaches informtion about customers to which said source and said destination belong **(Fig. 3, COS-Class of Service)**.

Regarding claim 89 and 93, Jha teaches receiving **(Fig. 7 156-Receive frame at Egress router)** an expansion frame with an expansion tag **(Fig. 3 112)** including information about forwarding to an egress edge node to said destination **(Fig. 3 114 and Col. 3 Lines 35-52 The labels 114 of each header 112 may be used with a Label Switched Path through an MPLS network)**, customer information **(Fig. 3 COS-Class of Service)** added to applied said data frame to transfer the frame to a path to said egress node **(Fig. 7 blocks 154 and 156 and Col. 5 Lines Col. 5 Lines 34-45 The frame in MPLS format may be transmitted through the MPLS network 132 for reception by an egress edge router 136)**.

Regarding claim 5, Jha teaches the limitations for claim 1 as applied above. Jha teaches at an ingress node of the source of said data frame on said network, said expansion tag is generated based on network information of said data frame and said generated said expansion tag is added to make said expansion frame **(Fig. 3 and Col. 3 Lines 35-52 The labels 114 of each header 112 may be used with a Label Switched Path through an MPLS network)**.

Regarding claim 6, Jha teaches the limitations for claim 1 as applied above. Jha

teaches at said egress node on said network, said expansion tag is deleted from said

expansion frame to make said data frame and said data frame is transferred to said

transfer destination **(Fig. 7, 158 and Col. 5 Lines 34-45 The egress edge router 136**

may remove the MPLS protocol identification field 102 and the MPLS label stack

104 from the frame).

Regarding Claim 7, Jha teaches the limitations for claim 1 as applied above. Jha

teaches said data frame comprises an Ethernet frame **(Fig. 3)**.

Regarding Claim 9, Jha teaches the limitations for claim 7 as applied above. Jha

teaches said expansion tag is inserted immediately after a source MAC address of said

Ethernet frame to make said expansion frame **(Fig. 3)**.

Regarding claim 11, Jha teaches the limitations for claim 1 as applied above. Jha

teaches identification information comprising identifier information of said egress node

or label information for reaching said egress node **(Fig. 3 114 Label)**.

Regarding claim 18, Jha teaches the limitations for claim 1 as applied above. Jha

teaches a length of said expansion tag is 32 bits and a length of a storage region of said

expansion tag is an integral multiple of 32 bits **(Fig. 3 a multiple of MPLS labels and**

each of them has 32 bits).

Regarding claims 65 and 69, Jha teaches the limitations for claim 49 as applied

above. Jha teaches a frame attribute detector for extracting frame attribute information

of applied said data frame to an input port of the node; an expansion tag generator for

generating said expansion tag based on said frame attribute information, and a frame

converter for adding said generated said expansion tag to applied said data frame to

convert the frame into an expansion frame **(Fig. 8 a circuit implementing the**

insertion and extraction methods and Col. 5 Lines 47-60 the port 138 interfacing

to a customer for receiving and sending frames of data).

Regarding claim 67, Jha teaches the limitations for claim 65 as applied above.

Jha teaches an Ethernet frame, inserts said expansion tag after said destination MAC

address **(Fig. 3)**.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

10.   Claims 8, 10, 12, 19-22, 50, 57, 66, 71, 77-80, and 90 are rejected under 35

U.S.C. 103(a) as being unpatentable over Jha (US 7,161,946) as applied to claims 1

and 49 above, and in view of Hama (US PGPUB 20040202171).

Regarding claim 50, Jha teaches the claim limitations as applied to claim1 above.

However, Jha does not teach a frame to be broadcast. Hama teaches **[0101]-[0104]** by

grouping, broadcast frames now need only be relayed within the group. It would have

been obvious for one of ordinary skill in the art at the time of the invention was made to

have a frame to be broadcast in order to construct access networks using VLAN-

compatible switches ([0032], Hama).

Regarding claim 8, however, Jha does not teach a VLAN tag of said Ethernet
frame is replaced by said expansion tag to make said expansion frame. Hama teaches
in **Fig. 2 and Fig. 3** a VLAN tag of said Ethernet frame is replaced by MPLS VPN
labels. It would have been obvious for one of ordinary skill in the art at the time of the
invention was made to have a VLAN tag of said Ethernet frame is replaced by said
expansion tag to make said expansion frame in order to construct access networks
using VLAN-compatible switches ([0032], Hama).

Regarding claim 10, Hama teaches when said Ethernet frame fails to have said
VLAN tag, said expansion tag is added between a source MAC address and Ethernet
attribute information to make said expansion frame **(Fig. 13, step 30 and paragraph
[0095]** when a packet arrives as an input, the transmit-side edge router checks to see
whether the packet has been tagged. Since the packet is an MPLS packet if it has not
been tagged, the edge router executes ordinary MPLS processing).

Regarding claims 12, 57, and 90, Jha teaches identification information
comprising identifier information of said egress node or label information for reaching
said egress node **(Fig. 3)**. Hama teaches additionally identifier information of said
ingress node **(Fig. 12, PKT2, IP Forwarding Label** (identifier information of said egress
node or label information for reaching said egress node**) and VPN Identification Label**
(identifier information of said ingress node**))**.

Regarding claims 19 and 77, Hama teaches in **Fig. 4, Fig. 10B, Fig. 11A-11C,
and Fig. 19** VPN Label and routing tables of edge (PE) routers (said ingress node, a
core node, and said egress node have table which makes an address of said transfer

destination and identification information of said egress node and a table which makes

identification information of said egress node and output port information correspond

with each other).

Regarding claims 20 and 78, Hama teaches in Fig. 4, 10B, 11A-11C, and 19

VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and

said egress node have table which makes an address of said transfer destination and

identification information of said egress node and a table which makes identification

information of said egress node and output port information correspond with each

other). Hama inherently teaches in paragraphs [0100]-[0102] upon receiving the ARP

packet (broadcast packet), the edge router PE A 211 creates a copy of the packet and

directs it through the other edge routers PE B 212 and PE C 213 (a table which makes

identification information of said ingress node and one or a plurality of output port

information correspond with each other).

Regarding claims 21 and 79, Hama teaches in Fig. 13 a VLAN ID (an existing

VLAN tag value or a group identifier obtained by grouping a part of existing VLAN tags

or a group identifier obtained by grouping all the existing VLAN tags).

Regarding claims 22 and 80, Hama teaches in Fig. 4, 10B, 11A-11C, and 19

VPN Label and routing tables of edge (PE) routers (said ingress node, a core node, and

said egress node have table which makes an address of said transfer destination and

identification information of said egress node and a table which makes identification

information of said egress node and output port information correspond with each

other). Hama further teaches Fig. 2 and paragraph [0072] a VPN identification unit

identifies a VPN by referring to the VID of the received VLAN packet and inputs the

packet to a tag/label converter (subrouter) that corresponds to this VPN. The subrouter

corresponding to the identified VPN has a table which already stores the

correspondence between VLAN and VPN identifiers (VPN labels) that specify VPNs to

which the VLANs specified by the VIDs belong. The edge router further includes a

route decision unit for deciding beforehand a route to a receive-side edge router using a

routing protocol and stores a forwarding label, which specifies the decided route, in an

MPLS network routing table (forwarding-label memory) in correspondence with the IP

address of the receive-side edge router (customer information of said transfer

destination correspond with each other).

Regarding claim 66, Jha teaches the limitations for claim 65 as applied above.

Hama teaches in Fig. 4 a table storing correspondence between VLAN IDs and VPN

identifiers (a correspondence information table in which information about

correspondence between frame attribute information generated by said frame attribute

detector and network information). Hama teaches in Fig. 2, Fig. 4, and paragraph [0072]

a VPN identification unit identifies a VPN by referring to the VID of the received VLAN

packet and inputs the packet to a tag/label converter that corresponds to this VPN (after

reading network information corresponding to said frame attribute information,

generates an expansion tag based on said network information).

Regarding claim 71, Hama teaches in Fig 2, Fig. 19, Fig 22, and paragraph

[0015] a terminal device on the transmitting side is connected to the edge router 1 via a

LAN or the like, and a terminal device at the destination having an IP address

10.1.100.0/24 is connected to the edge router 5 via a router and a LAN. If the two

terminal devices are to communicate, an LSP (Label Switched Path) is set up between

the edge routers 1, 5, to which the terminals are connected, in accordance with an LDP

(Label Distribution Protocol) and through use of a label, and label tables 1a to 4a are

formed in the MPLS routers 1 to 4, respectively, that form this LSP (receiving an

expansion frame transferred from said frame processing element to obtain output port

information based on network information stored in an expansion tag in said expansion

frame, and receiving an expansion frame and said output port information transferred

from said frame forwarding unit to output said frame with an expansion tag to a port as

set forth in said output port information).

11.   Claims 68 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Jha (US 7,161,946) as applied to claims 65 and 69 above, and in view of Chase

(US Patent 7257118).

        Regarding claims 68 and 70, Jha teaches an expansion tag separation unit **(Fig.

8)**. However, Jha does not expressly teach recalculating an FCS of said Ethernet frame

transferred from the expansion tag separation unit to rewrite the FCS. Chase teaches in

Fig. 2, Fig. 3, and Col. 1 Lines 64-67 the remainder of the frame relay frame is included

and a frame check sum (FCS) is computed. The frame is then passed down to the

physical layer and transmitted to the SPN. It would have been obvious for one of

ordinary skill in the art at the time of the invention was made to recalculate an FCS of

said Ethernet frame transferred from the expansion tag separation unit to rewrite the

FCS in order to output proper frames for different interfaces.

12.   Claims 72-76 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Jha (US 7,161,946) and in view of Hama (US PGPUB 20040202171) and

Kompella (US Patent 7,136,374).

        Regarding claim 72, Hama teaches in Fig 2, Fig. 19, Fig 22, and paragraph

[0015] a terminal device on the transmitting side is connected to the edge router 1 via a

LAN or the like, and a terminal device at the destination having an IP address

10.1.100.0/24 is connected to the edge router 5 via a router and a LAN. If the two

terminal devices are to communicate, an LSP (Label Switched Path) is set up between

the edge routers 1, 5, to which the terminals are connected, in accordance with an LDP

(Label Distribution Protocol) and through use of a label, and label tables 1a to 4a are

formed in the MPLS routers 1 to 4, respectively, that form this LSP (extracting

forwarding information from an expansion tag of said expansion frame received).

However, Jha and Hama do not expressly teach an expansion tag information table

indicative of correspondence between forwarding information in an expansion tag of

said expansion frame received and output port information, and referring to said

expansion tag information table to obtain output port information from the forwarding

information. Kompella teaches in Fig. 6, Fig. 9, and Fig.10 LSP in MPLS domain and

information stored at a provider/customer edge device. It would have been obvious for

one of ordinary skill in the art at the time of the invention was made to have an

expansion tag information table indicative of correspondence between forwarding information and output port information, and to refer to the expansion tag information table to obtain output port information from the forwarding information in order to minimize the number of routes that need to be stored on the service provider's routers and/or to support multicasting (Col. 3 Lines 35-42 Kompella).

Regarding claim 73, Jha, Hama, and Kompella teach the limitations for claim 72 as applied above. Jha teaches identifier information of said egress node or label information for reaching said egress node (Fig. 3 112 Label).

Regarding claims 74 and 75, Jha, Hama and Kompella teach the limitations for claim 72 as applied above. Hama teaches in Fig. 12 and paragraphs [0005], and [0101]-[0104] by grouping, broadcast frames now need only be relayed within the group (forwarding information is identification information composed of identifier information of said egress node or label information for reaching said egress node and identifier information of said ingress node).

Regarding claim 76, Jha, Hama and Kompella teach the limitations for claim 72 as applied above. Hama teaches in Fig. 6, Fig. 12, and paragraph [0093] the MPLS packet subsequently arrives at the target receive-side edge route along the preset route through the MPLS network while its forwarding label is replaced (said forwarding information is identification information composed of identifier information of said egress node and identifier information of a domain in each hierarchy to which the node belongs or label information for reaching said egress node).

Regarding claim 81, Jha teaches the limitations for claim 49 as applied above. Hama teaches in Fig. 6, Fig. 12, and paragraph [0093] the MPLS packet subsequently arrives at the target receive-side edge route along the preset route through the MPLS network while its forwarding label is replaced (a table which makes identification information of said egress node and identification information of a domain in each hierarchy to which the node belongs in an ingress node, a core node, and an egress node). It is inherent in Hama, however, Hama does not expressly teach a table which makes identification information of said egress node, information of a domain to which the node belongs, and output port information correspond with each other. Kompella teaches in Fig. 6, Fig. 9, and Fig.10 LSP in MPLS domain and information stored at a provider/customer edge device. It would have been obvious for one of ordinary skill in the art at the time of the invention was made to have a table which makes identification information of said egress node, information of a domain to which the node belongs, and output port information correspond with each other in order to minimize the number of routes that need to be stored on the service provider's routers and/or to support multicasting (Col. 3 Lines 35-42 Kompella).

Response to Arguments

13.   Applicant's arguments, filed 2/8/2008, with respect to the rejection(s) of claim(s) 1-2, 5-12, 18-22, 49-51, 56-57, 60, 65-67, 69-70, 77-80, 82, 84, 89-90, and 93 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejection has

been withdrawn. However, upon further consideration, a new ground(s) of rejection is

made in view of Jha.

Conclusion

14.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to EUNSOOK CHOI whose telephone number is (571)270-

1822. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wing Chan can be reached on 571-272-7493. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EC
12/5/2008

/Wing F. Chan/
Supervisory Patent Examiner, Art Unit 2419
12/8/08